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ABSTRACT

This study examined the characteristics of declared education majors and compared them to students who majored in other fields. Specific comparisons were made between the two groups: (1) biographical characteristics (age and sex) and academic abilities (grade point average and English competency); (2) psychological characteristics; (3) university success (termination status and grades); and (4) post university success in terms of type of employment, position, salary, responsibilities, and further education. Findings are presented in tabular form and discussed along with implications for further research. Capsule descriptions of personality traits are appended. (CJ)

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A COMPARISON OF STUDENTS WHO ENTER EDUCATION WITH THOSE WHO DO NOT

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ABSTRACT

Like any other profession teacher education attempts to entice the "best" candidates into its training programs. According to some research (Schalock, 1979) very few studies have examined the characteristics and circumstances of persons entering the teaching profession . This study examined the characteristics of a group of university students who entered the Faculty of Education and compared them with those of a group who did not enter the program. Although the findings cannot be generalized to the total university population it appears that education students share some common characteristics, and that those characteristics are not necessarily the ones which educators profess to favor in their students.

A COMPARISON OF STUDENTS WHO ENTER EDUCATION WITH THOSE WHO CHOOSE OTHER PROFESSIONS

Like any other profession, teacher education attempts to entice the "best" candidates into its training programs. The best candidates in this case are those who succeed in the education program, enter and remain in the teaching profession, and who ultimately become effective teachers. Several studies have examined the characteristics of effective teachers; for example, Veldman & Kelly, 1965; Hamacheck, 1969; Millar, 1975. A still larger number of studies have dealt with selection of teacher candidates. (For a fairly extensive review of this literature see Twa & Greene, 1979). The recent research in the area of evaluating teaching effectiveness is promising and studies in this field are too numerous to cite. However, there have been very few studies on teaching as an occupational choice. Schalock (1979) cites two major studies which contain a great deal of information about the flow of people into teaching (NEA, 1972 and Lortie, 1975) but he is still of the opinion that "these studies ... are few in number and have tended to be limited in scope. They also tend to be dated" (p. 365).

Generally, the research indicates that "persons entering teaching share common characteristics" (Schalock, p. 366). "Humanistic" reasons were cited most frequently as reasons for wanting to be teachers. These findings were supported by a twice-replicated University of Lethbridge study (Greene, 1978a, 1978b, and 1979). It also appears from the research that, although women in teaching still outnumber men, increasing numbers of men are entering the field. Schalock also cites several studies that support the widely-held view that students entering education are less academically able than students preparing for other professions, but he also cites more recent studies which

indicate that this may be changing. Some research has been done relative to the socioeconomic background of persons choosing a career in education but the conclusions appear to be ambiguous. Very little research has been done on the personality characteristics of persons planning to be teachers. Schalock concludes his review by stating that,"In a profession where there is so much talk about attracting better people it is odd that so little research has been done on the characteristics and circumstances of persons entering the profession, and the relationships among these conditions of entry and subsequent success .... Teaching as an occupational choice is a neglected aspect of research on teacher selection and needs to be pursued" (pp. 366, 367).

The University of Lethbridge QAULTEP project, which began in 1972 and is described in detail in Dravland & Greene (1979) is an attempt to analyze relationships among five phases of teacher education (pre-education, selection, training, placement, and work success) with the ultimate purpose being to develop a model for evaluating teacher education programs. Since 1972 data have been collected on approximately 700 students from the time they enter university through the education program and, for some, through several years of teaching. Several studies have been conducted within and among the five phases of QAULTEP but this is the first to examine the characteristics of persons who choose teaching as a career and to compare these students with those who are preparing for other careers.

Purpose and Objectives

The teacher education program at The University of Lethbridge includes two years of Arts and Science courses (pre-education) followed by two years in the Faculty of Education. Before a student is admitted to the Faculty of

Education he or she must successfully complete an "Orientation to Teaching" practicum course. The objective of this practicum is to "provide the student with an opportunity for vocational exploration and experience, and hence a more valid basis for subsequent career decision.... It also provides an opportunity for co-operating teachers in the school as well as university consultants to make judgements relative to the candidates' potential and suitability for teaching" (Field Experience Handbook, p. 11). The course may be credited in the Arts and Science program for successful students who elect not to enter education. Approximately 25% to 40% of the students who take this course do not enter education either because they do not meet the criteria or because they choose not to apply. At this time we do not know whether those students who enter education are those whom the Faculty should encourage; that is, those who possess characteristics most compatible with the philosophy of the teacher education program. Therefore, the major purpose of this pilot study was to examine the characteristics of a group of students who entered the Faculty of Education and to compare them with those of a group of university students who did not enter the program. Specific objectives were to:

1) compare biographical characteristics (sex and age) and academic abilities (G.P.A. and English competency) of students who entered education with those of a group who did not,

2) compare the psychological characteristics of students who entered education with those who did not,

3) compare university success (termination status and grades) for the two groups, and

4) compare the post-university success for the two groups in terms of type of employment, position, salary, responsibilities, and further education or training.

Methodology

The sample for this study consists of 259 students who enrolled in the Orientation to Teaching practicum between the spring of 1975 and the summer of 1976; 188 of those students subsequently entered the Faculty of Education (25 of those already had a baccalaureate degree) and 71 did not (Table 1).

Table 1

DESCRIPTION OF SAMPLE BY TYPE OF STUDENT AND SEX

Type of Student		Female	Male	Total
Entered Faculty of Education	n	117	46	163
	%	71.8	28.2	
Entered Faculty of Education with Prior Degree	n	8	17	25
	%	32.0	68.0	
Non-Education	n	45	26	71
	%	63.4	36.6	
Total	n	170	89	259
	%	65.6	34.4	100.0

This group is considered to be Sample III of the QAULTEP data bank. Biographical and psychological data (including psychological and English test scores) were collected on all students including those who did not enter education. These data are routinely collected each semester for all students on the first and second days of the practicum. The psychological tests included the following:

1) Minnesota Teacher Attitude Inventory (Cook et. al., 1951)

2) D-Scale (Rokeach, 1956) - a measure of dogmatism

3) Q-Sort (Block, 1961) - a measure of self-concept

4) 16 Personality Factor (Cattell, 1957) - standard scores on each sub-factor, and

5) California Psychological Inventory (Gough, 1957) - standard scores on each sub-scale.

(See Appendix A for a description of the 16PF and CPI sub-scales). The measure of English competency was the percentile rank on the College English Placement Test (Haugh & Brown).

Grade point averages and information on the termination status of the students were taken from permanent record cards when the students completed a degree or left the university. Finally, questionnaire postcards were sent to all students who did not complete a B. Ed. degree, and some information on the B. Ed. graduates was provided by The Alberta Department of Advanced Education and Manpower.

Descriptive and statistical analyses were used to describe the data. The Chi-Square test was used to examine relationships and T-Tests were used to test the significance of the differences between means. Values of alpha less than or equal to .05 were considered statistically significant.

RESULTS

Biographical and Academic Characteristics

There appeared to be no significant differences between students who entered education and those who didn't with respect to sex; 63% of non-education students and 67% of education students were female. However, a much larger percentage of the male students than female students in education entered the Faculty with a previous degree (refer to Table 1). Age was also not significantly different for the two groups. The mean age for non-education students was 22 years (S.D. = 3.63) and for education students was 21.7 years (S.D. = 3.63). Analysis of variance was used to test the interaction between sex and age. The interaction was not significant (p=.06). Together the two variables accounted for only 8.5% of the variance in whether the student entered education or not.

Admission grade point average, that is the cumulative G.P.A. at the completion of 20 Arts and Science courses at which time the student was eligible for admission to the Faculty of Education, was not significantly different for the two groups as a whole. However, for females there was a significant difference on admission G.P.A. (p=.02). The mean admission G.P.A. for females who entered education was 2.86 on a 4 point scale (S.D. = .49) and for females who did not enter education was 2.59 (S.D. = .67). There was no difference for males; the mean for males who entered education was 2.64 and for those who didn't was 2.71 (see Table 2).

English competencies as measured by the College English Placement test were not different for the two groups as a whole or when divided by sex. The English

test is used as a selection device and students who do not meet the minimum criteria are required to rewrite the tests before being admitted to the Faculty. Remedial English instruction was available to students requestiong help. These data were from the initial writing of the English tests.

TABLE 2

A COMPARISON OF ADMISSION G.P.A.'S OF
EDUCATION STUDENTS AND NON-EDUCATION STUDENTS

	Education Students			Non-Education Students			Significance of F
Sample	N	$\bar{X}$	SD	N	$\bar{X}$	SD	
Total Group	186	2.79	.50	65	2.63	.62	.073
Females	124	2.86	.49	40	2.59	.67	.006
Males	62	2.64	.50	25	2.71	.63	.567

Psychological Characteristics

Data from the five psychological tests were used to compare the two groups on psychological characteristics. Two of the tests, the 16PF and the CPI, have several sub-scales, which gave a total of 37 psychological measures. Means and standard deviations were calculated for these 37 variables.

For only three of these measures were there significantly different means between the total group of education students and non-education students. These measures were E16PF (submissiveness versus dominance) with the education students scoring toward the submissive end of the scale, SoCPI (socialization) and CmCPI (communality) with the education students scoring higher on both scales. For females, only two of these tests were significantly different -

O16PF (untroubled adequacy versus guilt-proneness) and E16PF (submissiveness versus dominance). Female education students tended to be more submissive and more guilt-prone.

Eleven of the tests had significantly different means for males. The statistically significant results are shown in Table 3. As indicated by the three significant factors of the 16PF, the males in education tended to be more conscientious, more group-dependent as opposed to being self-sufficient, and have higher self-concept control. According to the CPI sub-scales the male education students scored higher than non-education males on dominance, capacity for status, and other similar factors related to status and sociability. They also appeared to have a higher self-concept as indicated by the Q-Sort test which gives a measure of the relationship between the "real" and the "ideal" self.

Since the overall means may mask the real difference between the various groups, those scoring within approximately one standard deviation of the mean were eliminated from the following analysis:

Scores at or above seven on the 16PF were recoded as 2
Scores at or below four on the 16PF were recoded as 1
Scores at or above 60 of the CPI were recoded as 2
Scores at or below 40 on the CPI were recoded as 1
Scores within the mid range on both instruments were recoded as missing data.

Using this recoded data the 2 x 2 Chi-Square test was used to compare each factor on the CPI and the 16PF with non-education and education students for both males and females.

Female education students scored lower than female non-education students on E16PF (submissiveness vs dominance) and $Q_1$16PF (conservatism vs radicalism). Female education students scored higher than non-education students on O16PF (untroubled adequacy vs guilt-proneness). However, for an accurate interpre-

tation of the results one must examine the percentages within the cells of tables with significant Chi-Square results. For example, of the females who scored on the submissive end of the scale, 94% entered education. However, that does not imply that most females who entered education were humble or submissive. In fact two-thirds of them scored at the aggressive end of the scale (see Table 4). A similar statement could be made about O16PF. Again, of the 48 females who were more guilt-prone or worrying, 85% entered education, but of all females who entered education approximately equal numbers were at each end of the scale (see Table 5).

Male education students scored lower than non-education students on $Q_2$16PF (group adherence vs self-sufficiency) and higher on G16PF (weaker superego strength vs stronger superego strength), $Q_3$16PF (low integration vs high self-concept control), DoCPI (dominance), CsCPI (capacity for status), SoCPI (socialization) and AcCPI (achievement via conformance). For each of these tests (see Tables 7 to 13) not only was there a significantly higher proportion of males with a particular trait entering education, but also the percentage of males in education who exhibited that particular trait was considerably higher. An example may help to clarify this point. For G16PF (Table 7) 77% of the males who scored on the "conscientious" end of the scale entered education. Also, 75% (27 out of 36) of the males in education indicated a tendency toward conscientiousness or perseverance, as opposed to fewer than half of the males not in education.

Success in University

Students who entered education were much more likely to complete degree requirements than those who did not; 93% of the education students completed a B. Ed. degree while only about 46% of the non-education students completed degree requirements before leaving the university (See Table 14). The

mean termination G.P.A. for education students was significantly higher than for non-education students (See Table 15). When the group was divided by sex the difference was significant for females ($p=.001$) but not for males. However, when only those students who completed degree requirements were compared, the termination G.P.A.'s of the two groups were not different.

TABLE 3

PSYCHOLOGICAL TESTS WITH SIGNIFICANTLY DIFFERENT MEAN SCORES FOR MALE EDUCATION STUDENTS AND MALE NON-EDUCATION STUDENTS

		Education[a] Students		Non-Education[b] Students		
Test	Description	$\bar{X}$	SD	$\bar{X}$	SD	Probability
G16PF	Weaker vs Stronger Superego Strenth*	6.14	1.71	5.25	1.80	.035
$Q_2$16PF	Group Adherence vs Self-Sufficiency*	3.52	2.30	4.83	2.37	.020
$Q_3$16PF	Low Integration vs High Self-Concept Control*	6.98	1.90	5.71	2.10	.008
DoCPI	Dominance	55.84	11.67	49.64	9.27	.027
CsCPI	Capacity for Status	50.92	10.34	45.73	8.80	.039
SyCPI	Sociability	53.29	9.74	48.09	9.00	.031
ReCPI	Responsibility	46.16	8.57	40.77	10.88	.021
SoCPI	Socialization	52.35	7.84	46.14	10.61	.005
CmCPI	Communality	53.40	6.81	49.18	9.82	.027
AcCPI	Achievement via conformance	52.56	8.46	44.82	11.49	.001
Q-Sort	Self-Concept	.76	.15	.64	.24	.05

[a] N=62 [b] N=22

*Note: Higher scores indicate characteristics on the right side of the dichotomy. For example, persons who score high on Factor G16PF tend to have stronger superego strength (conscientiousness).

TABLE 4

CLASSIFICATION OF FEMALE STUDENTS ON 16PF CATEGORY E
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category E (Submissiveness vs Dominance)	Non-Education	Entered Education	Total
Humble, submissive	1 5.9	16 94.1	17 100.0
Assertive, aggressive	30 34.5	57 65.5	87 100.0
Total	31 29.8	73 70.2	104

X^2=4.28; p=.04
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 5

CLASSIFICATION OF FEMALE STUDENTS ON 16PF CATEGORY O
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category O (Untroubled adequacy vs Guilt-Proneness)	Non-Education	Entered Education	Total
Self-assured, confident	23 37.1	39 62.9	62 100.0
Apprehensive, worrying	7 14.6	41 85.4	48 100.0
Total	30 27.3	80 72.7	110

X^2=5.82; p=.02
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 6

CLASSIFICATION OF FEMALE STUDENTS ON 16PF CATEGORY Q1
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category Q_1 (Conservatism vs Radicalism)	Non-Education	Entered Education	Total
Conservative, traditional	8 15.1	45 84.9	53 100.0
Experimenting, analytical	20 34.5	38 65.5	58 100.0
Total	28 25.2	83 74.8	111

X^2=4.54; p=.03
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 7

CLASSIFICATION OF MALE STUDENTS ON 16PF CATEGORY G
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category G (Weaker Superego Strength vs Stronger Superego Strength)	Non-Education	Entered Education	Total
Expedient, casual	11 55.0	9 45.0	20 100.0
Conscientious, persevering	8 22.9	27 77.1	35 100.0
Total	19 34.5	36 65.5	55 100.0

X^2=4.48; p=.03
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 8

CLASSIFICATION OF MALE STUDENTS ON 16PF CATEGORY Q2
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category Q2 (Group Adherence vs Self-Sufficiency)	Non-Education	Entered Education	Total
Group Dependent	7 14.6	41 85.4	48 100.0
Self-Sufficient	6 46.2	7 53.8	13 100.0
Total	13 21.3	48 78.7	61

X^2=4.34; p=.03
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 9

CLASSIFICATION OF MALE STUDENTS ON 16PF CATEGORY Q3
BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category Q_3 (Low Integration vs High Self-Concept Control)	Non-Education	Entered Education	Total
Undisciplined Self-Conflict	7 46.7	8 53.3	15 100.0
Controlled	8 17.4	38 82.6	46 100.0
Total	15 24.6	46 75.4	61 100.0

X^2=3.77; p=.05
*Note: Students scoring in the mid range, 4 to 7, not included.

TABLE 10

CLASSIFICATION OF MALE STUDENTS ON THE CPI TEST
CATEGORY DO BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category DO (Dominance)	Non-Education	Entered Education	Total
Retiring, inhibited, commonplace	5 41.7	7 58.3	12 100.0
Aggressive, confident, outgoing	2 6.7	28 93.3	30 100.0
Total	7 16.7	35 83.3	42

X^2=5.25; p=.02
*Note: Students scoring in the mid range of Standard Scores, 40 to 60, are not included.

TABLE 11

CLASSIFICATION OF MALE STUDENTS ON THE CPI TEST
CATEGORY CS BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category CS (Capacity for Status)	Non-Education	Entered Education	Total
Apathetic, shy conventional, dull	8 50.0	8 50.0	16 100.0
Active, ambitious forceful, insightful	2 11.1	16 88.9	18 100.0
Total	10 29.4	24 70.6	34

X^2=4.44; p=.04
*Note: Students scoring in the mid range of Standard Scores, 40 to 60, are not included.

TABLE 12

CLASSIFICATION OF MALE STUDENTS ON THE CPI TEST
CATEGORY SO BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUATE TEST.*

Category SO (Socialization)	Non-Education	Entered Education	Total
Defensive, demanding, opinionated	8 61.5	5 38.5	13 100.0
Honest, industrious, obliging, sincere	0 0.0	11 100.0	11 100.0
Total	8 33.3	16 66.7	24

X^2=7.57; p=.006
*Note: Students socring in the mid range of Standard Scores, 40 to 60, are not included.

TABLE 13

CLASSIFICATION OF MALE STUDENTS ON THE CPI TEST
CATEGORY AC BY TYPE OF STUDENT: FREQUENCY FOR A CHI-SQUARE TEST.*

Category AC (Achievement Via Conformance)	Non-Education	Entered Education	Total
Coarse, stubborn, awkard, insecure	10 66.7	5 33.3	15 100.0
Capable, cooperative, organized, responsible	8 17.6	14 82.4	17 100.0
Total	13 40.6	19 59.4	32

X^2=6.04; p=.01
*Note: Students scoring in the mid range of Standard Scores, 40 to 60, are not included,

TABLE 14

COMPARISON OF EDUCATION AND NON-EDUCATION STUDENTS BY COMPLETION OF DEGREE*

Type of Student		Completed Degree	Degree Not Completed	Total
Education Students	n	149	12	161
	%	92.6	7.4	100.0
Non-Education Students	n	30	39	69
	%	43.5	56.5	100.0
Total	n	179	51	230
	%	77.3	22.2	100

*NOTE: Students who had completed a Baccalaureate Degree prior to the first Education practicum are not included (N=25). Also, four students were still enrolled at the time of this study.

$X^2 = 67.39$ $df = 1$ $p << .001$

TABLE 15

A COMPARISON OF TERMINATION G.P.A.'S OF EDUCATION STUDENTS AND NON-EDUCATION STUDENTS

	Education Students			Non-Education Students			Significance of F
Sample	N	$\bar{X}$	SD	N	$\bar{X}$	SD	
Total Group	188	2.90	.44	68	2.69	.65	.003
Females	125	2.97	.41	42	2.66	.68	.001
Males	63	2.78	.46	26	2.74	.61	.732

Post- University Success

The analysis of the post-university status of the two groups was conducted separately and in a descriptive rather than a statistical manner. Questionnaire postcards were sent to 70 of the students who did not enter the Faculty of Education (one was inadvertently missed) and to the eight education students who did not complete the program. Information on the B. Ed. graduates was provided by The Department of Advanced Education and Manpower. Therefore, the findings are discussed separately.

Education Students Information on the graduates of the program was obtained for a slightly different sample than the one on whom this study was based. A list of all 351 graduates who had received a B. Ed. degree between May of 1978 and May of 1979 was sent to the Department. That list contained many of the graduates in this study, but some had graduated before or since that time. However, there is no reason to suspect that the findings for this sample of graduates would be any different from the findings of the 1978-1979 graduates. Of those 351 graduates 85% were teaching or were in a teaching-related position in Alberta as of December, 1979. Five others were known to be teaching elsewhere; the whereabouts of the remaining 14% were unknown.

Twelve (6%) of the 188 education students left the university without a degree; two others were still enrolled at the time of this study. Of the twelve, two are employed full-time in businesses. Information on the others was not available.

Non-Education students Completed responses were received from the questionnaires sent to 70 of the 71 non-education students. Nine questionnaires were returned with addresses unknown. It is also likely that many others were not forwarded to the new addresses of the students. A response rate of 60% (31 out of 52) is not high but was not unexpected given the circumstances. Of those 31 respondents 18 (58%) were female. Most (81%) indicated that they were employed outside the home; most of these were employed full-time. One had re-entered education and will graduate this year. Eight had been employed less than one year, five for one to two years, and the remaining eight for more than two years. Fourteen of the students had taken further education or training since leaving the university; four of these had further university courses; the rest had taken training in a wide variety of other fields. One-half of those employed were receiving a salary of less than $10,000 per year. The median salary of those who were employed full-time and who responded to the question about salary (N=14), was just over $15,000.00.

DISCUSSION

It is extremely important to exercise caution in interpreting the results of this study. The students who enrolled in the Orientation to Teaching course and did not enter the Faculty of Education are in all probability not representative of the non-education university population as a whole. It is possible that some of these students were trying education as a "last resort", or were anticipating that the education course was an easy credit. Many other factors were not controlled in this study. Therefore, these findings must not at this stage be generalized to the total university population. Keeping in mind this very considerable caution, some conclusions might be made.

There appeared to be no significant differences between education and non-education students with respect to distribution by sex, age, pre-education G.P.A. and the scores on the College English Placement Test. However, significantly more males than females entered the faculty after a previous degree. Also the G.P.A. for females entering the faculty was significantly higher than for females not entering the faculty. This finding is contrary to findings reported by Schalock that students entering education are less academically able than those preparing for other professions. However, G.P.A. is one of the criteria used in selecting candidates for education at The University of Lethbridge so one would expect the mean admission G.P.A. to be higher for all education students. This was not true for the male students. It may be that males are still more free to choose other fields and to travel and consequently the "brighter" males still elect fields other than education.

The psychological data were recoded into high (2) and low (1) with scores in the mid range eliminated. Chi-Square tests on recoded data produced ten significant tests on the 16PF and CPI. Special caution must be exercised

when drawing conclusions from the Chi-Square analysis of the psychological characteristics. It is possible that in some tests distinctly different subgroups of the sample were used. Also, for females especially, although there was a tendency for those females with characteristics of submissiveness, guilt-proneness and conservatism to enter education, the actual proportion of females in education who displayed these characteristics was not high.

For male students there did seem to be more obvious differences between those who entered education and those who did not. Male education students tended to display one or more of the following characteristics as identified by the Chi-Square and/or T-Test analysis:

G16PF	stronger superego strength*	ReCPI	responsibility
$Q_2$16PF	group adherence*	SoCPI	socialization*
$Q_3$16PF	high self-concept control*	CmCPI	communality
DoCPI	dominance*	AcCPI	achievement via conformance
CsCPI	capacity for status*	Q-Sort	self-concept
SyCPI	sociability		

*significant for both Chi-Square and T-Test; others significant for T-Test only.

One might interpret these findings to mean that the students in education, in this sample especially the males, were likely to follow traditional social patterns and were less likely to deviate from established norms. This implies that they may be more willing to accept the status quo and less likely to initiate change in the school system.

Termination G.P.A.'s of education students tended to be higher than those of non-education students. However, there was no difference for males; the difference appeared to be caused by the significant difference for female students who had entered the program with significantly higher G.P.A.'s.

It appeared that education graduates generally were able to obtain a teaching position. Those who didn't enter the program were less likely to complete degree requirements but not enough information was available to reach conclusions about work success of those who had graduated with other degrees.

Future Research

A study is planned to test a large sample of the total university population on these same measures to determine whether the findings of this study are generalizable. If they are, then Faculties of Education might seriously examine whether the type of students who select education are the ones whom the Faculty should choose, or whether the Faculty and/or the educational system is geared to a particular clientele and is subtley discouraging some students whom educators profess to encourage.

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APPENDIX A

From: Manual for Forms A and B
Sixteen Personality Factor Questionnaires
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Capsule Descriptions of the Sixteen Primary Personality Factors

(more technical titles are in parentheses)

FACTOR A

Low Score Direction: ***Reserved***, Detached, Critical, Cool (Sizothymia, previously Schizothymia)*

vs.

High Score Direction: ***Outgoing***, Warmhearted, Easy-going, Participating (Affectothymia, previously Cyclothymia)*

The person who scores low (sten of 1 to 3) on Factor A tends to be stiff, cool, skeptical, and aloof. He likes things rather than people, working alone, and avoiding compromises of viewpoints. He is likely to be precise and "rigid" in his way of doing things and in personal standards, and in many occupations these are desirable traits. He may tend, at times, to be critical, obstructive, or hard.

The person who scores high (sten of 8 to 10) on Factor A tends to be goodnatured, easy-going, emotionally expressive (hence naturally Affectothymia), ready to cooperate, attentive to people, softhearted, kindly, adaptable. He likes occupations dealing with people and socially-impressive situations. He readily forms active groups. He is generous in personal relations, less afraid of criticism, better able to remember names of people.

*Because of its excellent confirmation of the Bleuler and Kretschmer schizothymia-cyclothymia dimension, Factor A has been so named since its discovery some twenty years ago. Unfortunately, the less-informed general public has insisted on the dramatic association with the schizophrenic abnormality rather than the normal dry, withdrawn temperament. Worse, the literal translation as "split personality" has led to the erroneous association of a schizothyme with multiple personality—a disorder perhaps more likely to be found at the opposite end of the scale!

Accordingly, it seems best henceforth to refer to the A dimension as *Sizothymia* (sī·zō·thī'mĭ·ă) vs. *Affectothymia*. "*Sizo*" stresses the emotional detachment, dryness, or flatness of A- (*sizo* from *assidere*, as in the root for painter's *size* used to make colors "lie *flat*"). At the same time, it would improve the A+ reference to call it *Affectothymia*, emphasizing the affective rather than the cyclical aspect, since easy emotional expansiveness and contact are more central than mood swings. Associations with the abnormal projection, as in affective psychosis, may be present but have not been proved. The clearer distinction by sound of *Sizothymic* and *Affectothymic* should also assist oral discussion.

FACTOR B

Less Intelligent, Concrete-thinking (Lower scholastic mental capacity)

vs.

More Intelligent, Abstract-thinking, Bright (Higher scholastic mental capacity)

The person scoring low on Factor B tends to be slow to learn and grasp, dull, given to concrete and literal interpretation. His dullness may be simply a reflection of low intelligence, or it may represent poor functioning due to psychopathology.

The person who scores high on Factor B tends to be quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture, and some with alertness. High scores contraindicate deterioration of mental functions in pathological conditions.

FACTOR C

Affected By Feelings, Emotionally Less Stable, Easily Upset
(Lower ego strength)

vs.

Emotionally Stable, Faces Reality, Calm, Mature
(Higher ego strength)

The person who scores low on Factor C tends to be low in frustration tolerance for unsatisfactory conditions, changeable and plastic, evading necessary reality demands, neurotically fatigued, fretful, easily emotional and annoyed, active in dissatisfaction, having neurotic symptoms (phobias, sleep disturbances, psychosomatic complaints, etc.). Low Factor C score is common to almost all forms of neurotic and some psychotic disorders.

The person who scores high on Factor C tends to be emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group morale. Sometimes he may be a person making a resigned adjustment* to unsolved emotional problems.

*Shrewd clinical observers have pointed out that a good C level sometimes enables a person to achieve effective adjustment despite an underlying psychotic potential.

FACTOR E

Humble, Mild, Accommodating, Conforming
(Submissiveness)

vs.

Assertive, Independent, Aggressive, Stubborn
(Dominance)

The person who scores low on Factor E tends to give way to others, to be docile, and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotic syndromes.

The person who scores high on Factor E is assertive, self-assured, and independent-minded. He tends to be austere, a law to himself, hostile or extrapunitive, authoritarian (managing others), and disregards authority.

FACTOR F

Sober, Prudent, Serious, Taciturn
(Desurgency)

vs.

Happy-go-lucky, Impulsively Lively, Gay, Enthusiastic
(Surgency)

The person who scores low on Factor F tends to be restrained, reticent, introspective. He is sometimes dour, pessimistic, unduly deliberate, and considered smug and primly correct by observers. He tends to be a sober, dependable person.

The person who scores high on this trait tends to be cheerful, active, talkative, frank, expressive, effervescent, carefree. He is frequently chosen as an elected leader. He may be impulsive and mercurial.

FACTOR G

Expedient, Evades Rules, Feels Few Obligations
(Weaker superego strength)

vs. ***Conscientious***, Persevering, Staid, Rule-bound
(Stronger superego strength)

The person who scores low on Factor G tends to be unsteady in purpose. He is often casual and lacking in effort for group undertakings and cultural demands. His freedom from group influence may lead to anti-social acts, but at times makes him more effective, while his refusal to be bound by rules causes him to have less somatic upset from stress.

The person who scores high on Factor G tends to be exacting in character, dominated by sense of duty, persevering, responsible, planful, "fills the unforgiving minute." He is usually conscientious and moralistic, and he prefers hard-working people to witty companions. The inner "categorical imperative" of this essential superego (in the psychoanalytic sense) should be distinguished from the superficially similar "social ideal self" of Q_3+.

FACTOR H

Shy, Restrained, Diffident, Timid
(Threctia)

vs. ***Venturesome***, Socially-bold, Uninhibited, Spontaneous
(Parmia)

The person who scores low on this trait tends to be shy, withdrawing, cautious, retiring, a "wallflower." He usually has inferiority feelings. He tends to be slow and impeded in speech and in expressing himself, dislikes occupations with personal contacts, prefers one or two close friends to large groups, and is not given to keeping in contact with all that is going on around him.

The person who scores high on Factor H is sociable, bold, ready to try new things, spontaneous, and abundant in emotional response. His "thick-skinnedness" enables him to face wear and tear in dealing with people and grueling emotional situations, without fatigue. However, he can be careless of detail, ignore danger signals, and consume much time talking. He tends to be "pushy" and actively interested in the opposite sex.

FACTOR I

Tough-minded, Self-reliant, Realistic, No-nonsense
(Harria)

vs. ***Tender-minded***, Dependent, Over-protected, Sensitive
(Premsia)

The person who scores low on Factor I tends to be practical, realistic, masculine, independent, responsible, but skeptical of subjective, cultural elaborations. He is sometimes unmoved, hard, cynical, smug. He tends to keep a group operating on a practical and realistic "no-nonsense" basis.

The person who scores high on Factor I tends to be tender-minded, day-dreaming, artistic, fastidious, feminine. He is sometimes demanding of attention and help, impatient, dependent, impractical. He dislikes crude people and rough occupations. He tends to slow up group performance, and to upset group morale by unrealistic fussiness.

FACTOR L

Trusting, **Adaptable, Free of Jealousy, Easy to Get on With**
(Alaxia)

vs.

Suspicious, **Self-opinionated, Hard to Fool**
(Protension)

The person who scores low on Factor L tends to be free of jealous tendencies, adaptable, cheerful, un-competitive, concerned about other people, a good team worker.

The person who scores high on Factor L tends to be mistrusting and doubtful. He is often involved in his own ego, is self-opinionated, and interested in internal, mental life. He is usually deliberate in his actions, unconcerned about other people, a poor team member.

N.B. This factor is *not* necessarily paranoia. In fact, the data on paranoid schizophrenics are not clear as to typical Factor L value to be expected.

FACTOR M

Practical, **Careful, Conventional, Regulated by External Realities, Proper**
(Praxernia)

vs.

Imaginative, **Wrapped up in Inner Urgencies, Careless of Practical Matters, Bohemian**
(Autia)

The person who scores low on Factor M tends to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible. He is concerned over detail, able to keep his head in emergencies, but sometimes unimaginative.

The person who scores high on Factor M tends to be unconventional, unconcerned over everyday matters, Bohemian, self-motivated, imaginatively-creative, concerned with "essentials," and oblivious of particular people and physical realities. His inner-directed interests sometimes lead to unrealistic situations accompanied by expressive outbursts. His individuality tends to cause him to be rejected in group activities.

FACTOR N

Forthright, **Natural, Artless, Sentimental**
(Artlessness)

vs.

Shrewd, **Calculating, Worldly, Penetrating**
(Shrewdness)

The person who scores low on Factor N tends to be unsophisticated, sentimental, and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous.

The person who scores high on Factor N tends to be polished, experienced, worldly, shrewd. He is often hardheaded and analytical. He has an intellectual, unsentimental approach to situations, an approach akin to cynicism.

FACTOR O

Placid, Self-assured, Confident, Serene *vs.* ***Apprehensive,*** Worrying, Depressive, Troubled
(Untroubled adequacy) (Guilt proneness)

The person who scores low on Factor O tends to be placid, with unshakable nerve. He has a mature, unanxious confidence in himself and his capacity to deal with things. He is resilient and secure, but to the point of being insensitive of when a group is not going along with him, so that he may evoke antipathies and distrust.

The person who scores high on Factor O tends to be depressed, moody, a worrier, full of foreboding, and brooding. He has a childlike tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate. High Factor O score is very common in clinical groups of all types (see *Handbook*).

FACTOR Q_1

Conservative, Respecting Established Ideas, Tolerant of Traditional Difficulties
(Conservatism)

vs.

Experimenting, Critical, Liberal, Analytical, Free-thinking
(Radicalism)

The person who scores low on Factor Q_1 is confident in what he has been taught to believe, and accepts the "tried and true," despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus, he tends to oppose and postpone change, is inclined to go along with tradition, is more conservative in religion and politics, and tends not to be interested in analytical "intellectual" thought.

The person who scores high on Factor Q_1 tends to be interested in intellectual matters and has doubts on fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed, less inclined to moralize, more inclined to experiment in life generally, and more tolerant of inconvenience and change.

FACTOR Q_2

Group-dependent, A "Joiner" and Sound Follower
(Group adherence)

vs.

Self-sufficient, Prefers Own Decisions, Resourceful
(Self-sufficiency)

The person who scores low on Factor Q_2 prefers to work and make decisions with other people, likes and depends on social approval and admiration. He tends to go along with the group and may be lacking in individual resolution. He is not necessarily gregarious by choice; rather he needs group support.

The person who scores high on Factor Q_2 is temperamentally independent, accustomed to going his own way, making decisions and taking action on his own. He discounts public opinion, but is not necessarily dominant in his relations with others (see Factor E). He does not dislike people but simply does not need their agreement or support.

FACTOR Q_3

Undisciplined Self-conflict, Careless of Protocol, Follows Own Urges
(Low integration)

vs.

Controlled, Socially-precise, Following Self-image
(High self-concept control)

The person who scores low on Factor Q_3 will not be bothered with will control and regard for social demands. He is not overly considerate, careful, or painstaking. He may feel maladjusted, and many maladjustments (especially the affective, but not the paranoid) show Q_3-.

The person who scores high on Factor Q_3 tends to have strong control of his emotions and general behavior, is inclined to be socially aware and careful, and evidences what is commonly termed "self-respect" and regard for social reputation. He sometimes tends, however, to be obstinate. Effective leaders, and some paranoids, are high on Q_3.

FACTOR Q_4

Relaxed, Tranquil, Torpid, Unfrustrated
(Low ergic tension)

vs.

Tense, Frustrated, Driven, Overwrought
(High ergic tension)

The person who scores low on Factor Q_4 tends to be sedate, relaxed, composed, and satisfied (not frustrated). In some situations, his oversatisfaction can lead to laziness and low performance, in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance.

The person who scores high on Factor Q_4 tends to be tense, excitable, restless, fretful, impatient. He is often fatigued, but unable to remain inactive. In groups he takes a poor view of the degree of unity, orderliness, and leadership. His frustration represents an excess of stimulated, but undischarged, drive.

VIII. THE SPECIAL STANDARD SCORE PROCEDURES FOR SECOND-ORDER FACTORS

It has been indicated above that the 16 PF can be scored for four broad second-order factors (and some derivations) as well as for the sixteen primaries. They consist of the following well known dimensions, for which it has recently become possible to give unique experimental definition.

I.* Adjustment vs. *Anxiety*
II. Introversion vs. *Extraversion*
III. Tenderminded Emotionality vs. *Alert Poise*
IV. Subduedness vs. *Independence*

Second-order scores are not derived from *raw* scores on the primaries but from the *stens* into which the former have first been converted. If the primary sten scores are combined, with weights as shown in the following tables, they will come out as stens for the second-orders, directly. However, they will not come out *exactly* as stens because, for convenience, whole numbers are used for

*Second-orders are labeled in Roman numerals to distinguish them from primaries, which have alphabetic designations.

From: CPI Manual, Harrison G. Gough
Consulting Psychologists Press, Inc.
Palo Alto, California

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HIGH SCORERS	SCALE AND PURPOSE	LOW SCORERS
Class I. Measures of Poise, Ascendancy, Self-Assurance and Interpersonal Adequacy		
Aggressive, confident, persistent, and planful; as being persuasive and verbally fluent; as self-reliant and independent; and as having leadership potential and initiative.	**1. Do (dominance) To assess factors of leadership ability, dominance, persistence, and social initiative.**	Retiring, inhibited, commonplace, indifferent, silent and unassuming; as being slow in thought and action; as avoiding of situations of tension and decision; and as lacking in self-confidence.
Ambitious, active, forceful, insightful, resourceful, and versatile; as being ascendant and self-seeking; effective in communication; and as having personal scope and breadth of interests.	**2. Cs (capacity for status) To serve as an index of an individual's capacity for status (not his actual or achieved status). The scale attempts to measure the personal qualities and attributes which underlie and lead to status.**	Apathetic, shy, conventional dull, mild, simple, and slow; as being stereotyped in thinking; restricted in outlook and interests; and as being uneasy and awkward in new or unfamiliar social situations.
Outgoing, enterprising, and ingenious; as being competitive and forward; and as original and fluent in thought.	**3. Sy (sociability) To identify persons of outgoing, sociable, participative temperament.**	Awkward, conventional, quiet, submissive, and unassuming; as being detached and passive in attitude; and as being suggestible and overly influenced by others' reactions and opinions.
Clever, enthusiastic, imaginative, quick, informal, spontaneous, and talkative; as being active and vigorous; and as having an expressive, ebullient nature.	**4. Sp (social presence) To assess factors such as poise, spontaneity, and self-confidence in personal and social interaction.**	Deliberate, moderate, patient, self-restrained, and simple; as vacillating and uncertain in decision; and as being literal and unoriginal in thinking and judging.
Intelligent, outspoken, sharp-witted, demanding, aggressive, and self-centered; as being persuasive and verbally fluent; and as possessing self-confidence and self-assurance.	**5. Sa (self-acceptance) To assess factors such as sense of personal worth, self-acceptance, and capacity for independent thinking and action.**	Methodical, conservative, dependable, conventional, easygoing, and quiet; as self-abasing and given to feelings of guilt and self-blame; and as being passive in action and narrow in interests.
Energetic, enterprising, alert, ambitious, and versatile; as being productive and active; and as valuing work and effort for its own sake.	**6. Wb (sense of well-being) To identify persons who minimize their worries and complaints, and who are relatively free from self-doubt and disillusionment.**	Unambitious, leisurely, awkward, cautious, apathetic, and conventional; as being self-defensive and apologetic; and as constricted in thought and action.
Class II. Measures of Socialization, Maturity, Responsibility, and Interpersonal Structuring of Values		
Planful, responsible, thorough, progressive, capable, dignified, and independent; as being conscientious and dependable; resourceful and efficient; and as being alert to ethical and moral issues.	**7. Re (responsibility) To identify persons of conscientious, responsible, and dependable disposition and temperament.**	Immature, moody, lazy, awkward, changeable, and disbelieving; as being influenced by personal bias, spite, and dogmatism; and as under-controlled and impulsive in behavior.
Serious, honest, industrious, modest, obliging, sincere, and steady; as being conscientious and responsible; and as being self-denying and conforming.	**8. So (socialization) To indicate the degree of social maturity, integrity, and rectitude which the individual has attained.**	Defensive, demanding, opinionated, resentful, stubborn, headstrong, rebellious, and undependable; as being guileful and deceitful in dealing with others; and as given to excess, exhibition, and ostentation in their behavior.
Calm, patient, practical, slow, self-denying, inhibited, thoughtful, and deliberate; as being strict and thorough in their own work and in their expectations for others; and as being honest and conscientious.	**9. Sc (self-control) To assess the degree and adequacy of self-regulation and self-control and freedom from impulsivity and self-centeredness.**	Impulsive, shrewd, excitable, irritable, self-centered, and uninhibited; as being aggressive and assertive; and as overemphasizing personal pleasure and self-gain.
Enterprising, informal, quick, tolerant, clear-thinking, and resourceful; as being intellectually able and verbally fluent; and as having broad and varied interests.	**10. To (tolerance) To identify persons with permissive, accepting, and non-judgmental social beliefs and attitude.**	Suspicious, narrow, aloof, wary, and retiring; as being passive and overly judgmental in attitude; and as disbelieving and distrustful in personal and social outlook.
Co-operative, enterprising, outgoing, sociable warm, and helpful; as being concerned with making a good impression; and as being diligent and persistent.	**11. Gi (good impression) To identify persons capable of creating a favorable impression, and who are concerned about how others react to them.**	Inhibited, cautious, shrewd, wary, aloof, and resentful; as being cool and distant in their relationships with others; and as being self-centered and too little concerned with the needs and wants of others.

HIGH SCORERS	SCALE AND PURPOSE	LOW SCORERS

Class II. Measures of Socialization, Maturity, Responsibility, and Intrapersonal Structuring of Values

(Continued)

Dependable, moderate, tactful, reliable, sincere, patient, steady, and realistic; as being honest and conscientious; and as having common sense and good judgment.	**12. Cm (communality) To indicate the degree to which an individual's reactions and responses correspond to the modal ("common") pattern established for the inventory.**	Impatient, changeable, complicated, imaginative, disorderly, nervous, restless, and confused; as being guileful and deceitful; inattentive and forgetful; and as having internal conflicts and problems.

Class III. Measures of Achievement Potential and Intellectual Efficiency

Capable, co-operative, efficient, organized, responsible, stable, and sincere; as being persistent and industrious; and as valuing intellectual activity and intellectual achievement.	**13. Ac (achievement via conformance) To identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior.**	Coarse, stubborn, aloof, awkward, insecure, and opinionated; as easily disorganized under stress or pressures to conform; and as pessimistic about their occupational futures.
Mature, forceful, strong, dominant, demanding, and foresighted; as being independent and self-reliant; and as having superior intellectual ability and judgment.	**14. Ai (achievement via independence) To identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors.**	Inhibited, anxious, cautious, dissatisfied, dull, and wary; as being submissive and compliant before authority; and as lacking in self-insight and self-understanding.
Efficient, clear-thinking, capable, intelligent, progressive, planful, thorough, and resourceful; as being alert and well-informed; and as placing a high value on cognitive and intellectual matters.	**15. Ie (intellectual efficiency) To indicate the degree of personal and intellectual efficiency which the individual has attained.**	Cautious, confused, easygoing, defensive, shallow, and unambitious; as being conventional and stereotyped in thinking; and as lacking in self-direction and self-discipline.

Class IV. Measures of Intellectual and Interest Modes

Observant, spontaneous, quick, perceptive, talkative, resourceful, and changeable; as being verbally fluent and socially ascendant; and as being rebellious toward rules, restrictions, and constraints.	**16. Py_x (psychological-mindedness) To measure the degree to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others.**	Apathetic, peaceable, serious, cautious, and unassuming; as being slow and deliberate in tempo; and as being overly conforming and conventional.
Insightful, informal, adventurous, confident, humorous, rebellious, idealistic, assertive, and egoistic; as being sarcastic and cynical; and as highly concerned with personal pleasure and diversion.	**17. Fx (flexibility) To indicate the degree of flexibility and adaptability of a person's thinking and social behavior.**	Deliberate, cautious, worrying, industrious, guarded, mannerly, methodical, and rigid; as being formal and pedantic in thought; and as being overly deferential to authority, custom, and tradition.
Appreciative, patient, helpful, gentle, moderate, persevering, and sincere; as being respectful and accepting of others; and as behaving in a conscientious and sympathetic way.	**18. Fe (femininity) To assess the masculinity or femininity of interests. (High scores indicate more feminine interests, low scores more masculine.)**	Outgoing, hard-headed, ambitious, masculine, active, robust, and restless; as being manipulative and opportunistic in dealing with others; blunt and direct in thinking and action; and impatient with delay, indecision and reflection.